

CAPPING A (639)

Version 1

Revision Date 10/27/2008

Print Date 10/27/2008

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : CAPPING A (639)
MSDS Number : 000000011334
Product Use Description : Capping Reagent for DNA/RNA Synthesis

Company : Honeywell International Inc.
1953 South Harvey Street
Muskegon, MI 49442

For more information call : 1-800-368-0050
(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : Medical: 1-800-498-5701
: **Transportation: 1-800-424-9300 or +1-703-527-3887**
: (24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Form : liquid, clear

Color : colourless

Odor : ether-like

Hazard Summary : Extremely flammable. In use, may form flammable/explosive vapour-air mixture. May form explosive peroxides. Corrosive. Causes burns. Harmful by inhalation. May be harmful if swallowed. May be harmful if absorbed through skin. Irritating to eyes, respiratory system and skin. May cause irritation of the gastrointestinal tract. Repeated exposure may cause skin dryness or cracking. Confirmed animal carcinogen with unknown relevance to humans.

Potential Health Effects

Skin : Causes skin burns.
Can be absorbed through skin.
Prolonged or repeated skin contact with liquid may cause defatting resulting in drying, redness and possible blistering.

Eyes : Causes eye burns.
Causes itching, burning, redness and tearing.

Ingestion : Ingestion causes burns of the upper digestive and respiratory

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SECTION 4. FIRST AID MEASURES

- Inhalation : Call a physician immediately. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present.
- Skin contact : Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician immediately.
- Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.
- Ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician immediately.

Notes to physician

- Treatment : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

- Flash point : -15 °C (5 °F)
closed cup
- Ignition temperature : 321 °C (610 °F)
The physical data is that of the main component.
- Lower explosion limit : 2 %(V)
The physical data is that of the main component.
- Upper explosion limit : 11.8 %(V)
The physical data is that of the main component.
- Suitable extinguishing media : Carbon dioxide (CO₂)
Dry chemical
Alcohol-resistant foam
Cool closed containers exposed to fire with water spray.
- Extinguishing media which shall not be used for safety reasons : Do not use a solid water stream as it may scatter and spread fire.
- Specific hazards during fire : Extremely flammable.

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fighting

Vapours may form explosive mixtures with air.
 Vapours are heavier than air and may spread along floors.
 Vapors may travel to areas away from work site before igniting/flashing back to vapor source.
 May form explosive peroxides.
 In case of fire hazardous decomposition products may be produced such as:
 Carbon monoxide
 Carbon dioxide (CO₂)

Special protective equipment for fire-fighters

: Wear self-contained breathing apparatus and protective suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions

: Wear personal protective equipment.
 Immediately evacuate personnel to safe areas.
 Keep people away from and upwind of spill/leak.
 Ensure adequate ventilation.
 Remove all sources of ignition.
 Do not swallow.
 Do not breathe vapours or spray mist.
 Do not get in eyes, on skin, or on clothing.

Environmental precautions

: Prevent further leakage or spillage if safe to do so.
 Discharge into the environment must be avoided.
 Do not flush into surface water or sanitary sewer system.
 Prevent product from entering drains.
 Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Methods for cleaning up

: Ventilate the area.
 No sparking tools should be used.
 Use explosion-proof equipment.
 Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13).

SECTION 7. HANDLING AND STORAGE
Handling

Handling

: Wear personal protective equipment.
 Use only in well-ventilated areas.
 Keep container tightly closed.
 Do not smoke.
 Do not swallow.
 Do not breathe vapours or spray mist.

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Do not get in eyes, on skin, or on clothing.

Advice on protection against fire and explosion : May form explosive peroxides.
 Keep away from fire, sparks and heated surfaces.
 Take precautionary measures against static discharges.
 Ensure all equipment is electrically grounded before beginning transfer operations.
 Use explosion-proof equipment.
 Keep product and empty container away from heat and sources of ignition.
 No sparking tools should be used.
 No smoking.

Storage

Requirements for storage areas and containers : Store in area designed for storage of flammable liquids. Protect from physical damage.
 Keep containers tightly closed in a dry, cool and well-ventilated place.
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.
 Keep away from heat and sources of ignition.
 Keep away from direct sunlight.
 Store away from incompatible substances.
 Protect from exposure to air/oxygen (peroxide formation).
 Protect against light.
 Container hazardous when empty.
 Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures : Use with local exhaust ventilation.
 Prevent vapor buildup by providing adequate ventilation during and after use.

Eye protection : Do not wear contact lenses.
 Wear as appropriate:
 Safety glasses with side-shields
 If splashes are likely to occur, wear:
 Goggles or face shield, giving complete protection to eyes

Hand protection : Solvent-resistant gloves
 Gloves must be inspected prior to use.
 Replace when worn.

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- Skin and body protection : Wear as appropriate:
 Solvent-resistant apron
 Flame retardant antistatic protective clothing
 If splashes are likely to occur, wear:
 Protective suit
- Respiratory protection : In case of insufficient ventilation wear suitable respiratory equipment.
 For rescue and maintenance work in storage tanks use self-contained breathing apparatus.
 Use NIOSH approved respiratory protection.
- Hygiene measures : When using, do not eat, drink or smoke.
 Wash hands before breaks and immediately after handling the product.
 Keep working clothes separately.
 Remove and wash contaminated clothing before re-use.
 Do not swallow.
 Do not breathe vapours or spray mist.
 Do not get in eyes, on skin, or on clothing.

Exposure Guidelines

Tetrahydrofuran	109-99-9	ACGIH	TWA		50 ppm
				Skin designation: Can be absorbed through the skin.	
		ACGIH	STEL		100 ppm
		NIOSH	REL	200 ppm	590 mg/m3
		NIOSH	STEL	250 ppm	735 mg/m3
		OSHA Z1	PEL	200 ppm	590 mg/m3
		OSHA Z1A	TWA	200 ppm	590 mg/m3
		OSHA Z1A	STEL	250 ppm	735 mg/m3
		US CA OEL	TWA PEL	200 ppm	590 mg/m3
		US CA OEL	STEL	250 ppm	735 mg/m3
Acetic anhydride	108-24-7	ACGIH	TWA		5 ppm
		NIOSH	Ceil_Time	5 ppm	20 mg/m3
		OSHA Z1	PEL	5 ppm	20 mg/m3

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OSHA Z1A	Ceiling	5 ppm	20 mg/m ³
US CA OEL	Ceiling	5 ppm	20 mg/m ³

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: liquid, clear
Color	: colourless
Odor	: ether-like
pH	: not applicable
Melting point/range	: -108.5 °C (-163.3 °F) The information regarding melting point/freezing point are those of the pure substance.
Boiling point/boiling range	: 66 °C (151 °F) The information regarding the boiling point is that of the pure substance.
Vapor pressure	: 189 hPa at 20 °C (68 °F) The information regarding the vapour pressure is that of the solvent.
Relative vapour density	: 2.5 (Air = 1.0), The physical data is that of the main component.
Density	: 0.888 g/cm ³ at 20 °C (68 °F)The information regarding the density is that of the pure substance.
Water solubility	: completely soluble

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Heat, flames and sparks. Keep away from direct sunlight. Protect against water. Protect from moisture. Protect from exposure to air/oxygen (peroxide formation). Protect against light.
Materials to avoid	: Water Alcohols

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	<p>Amines Strong oxidizing agents Strong acids and strong bases May form explosive peroxides. May attack many plastics, rubbers and coatings.</p>
Hazardous decomposition products	<p>: Peroxides In case of fire hazardous decomposition products may be produced such as: Carbon monoxide Carbon dioxide (CO₂)</p>
Hazardous reactions	<p>: Hazardous polymerisation does not occur. Stable under normal conditions.</p>

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	<p>: LD50 rat Dose: 1,650 mg/kg Test substance: Tetrahydrofuran</p>
Acute oral toxicity	<p>: LD50 rat Dose: 1,780 mg/kg Test substance: Acetic anhydride</p>
Acute dermal toxicity	<p>: LD50 rabbit Dose: 4,332 mg/kg Test substance: Acetic anhydride</p>
Acute inhalation toxicity	<p>: LC50 rat Dose: 21000 ppm Exposure time: 3 h Test substance: Tetrahydrofuran</p>
Acute inhalation toxicity	<p>: LC0 rat Dose: 4.18 mg/l Exposure time: 4 h Test substance: Acetic anhydride</p>
Acute inhalation toxicity	<p>: LC100 rat Dose: 8.36 mg/l Exposure time: 4 h Test substance: Acetic anhydride</p>
Additional advice	<p>: Confirmed animal carcinogen with unknown relevance to humans.</p>

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SECTION 12. ECOLOGICAL INFORMATION

Toxicity to fish	:	LC50 Species: Pimephales promelas (fathead minnow) Dose: 2,160 mg/l Exposure time: 96 h Test substance: Tetrahydrofuran
Toxicity to fish	:	LC50 Species: Leuciscus idus (Golden orfe) Dose: 2,820 mg/l Exposure time: 48 h Test substance: Tetrahydrofuran
Toxicity to fish	:	LC50 Species: Leuciscus idus (Golden orfe) Dose: 265 mg/l Exposure time: 48 h Test substance: Acetic anhydride
Toxicity to daphnia and other aquatic invertebrates.	:	LC50 Species: Daphnia magna (Water flea) Dose: 55 mg/l Exposure time: 24 h Test substance: Acetic anhydride
Toxicity to algae	:	Cell multiplication inhibition test Species: Scenedesmus quadricauda Dose: 3,400 mg/l Exposure time: 8 d Test substance: Acetic anhydride
Toxicity to bacteria	:	LC50 Species: Bacteria Dose: > 580 mg/l Exposure time: 16 h Test substance: Tetrahydrofuran

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Information: Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT	UN-Number	:	2924
	Proper shipping name	:	Flammable liquid, corrosive, n.o.s.

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(Tetrahydrofuran
, Acetic anhydride
)
 Class : 3
 Packing group : II
 Hazard Label : 3 (8)

IATA UN Number : 2924
 Description of the goods : Flammable liquid, corrosive, n.o.s.
 (Tetrahydrofuran, Acetic anhydride
)
 Class : 3
 Packaging group : II
 Hazard Label : 3 (8)
 Packing instruction (cargo aircraft) : 307
 Packing instruction (passenger aircraft) : 305
 Packing instruction (passenger aircraft) : Y305

IMDG Substance No. : UN 2924
 Description of the goods : Flammable liquid, corrosive, n.o.s.
 (TETRAHYDROFURAN
, ACETIC ANHYDRIDE
)
 Class : 3
 Packaging group : II
 Hazard Label : 3 (8)
 EmS Number : F-E
 Marine pollutant : no

SECTION 15. REGULATORY INFORMATION
Inventories

EU. EINECS : On the inventory, or in compliance with the inventory

US. Toxic Substances Control Act : On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act : On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic : All components of this product are on the Canadian DSL list.

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Substances List (DSL).
 (Can. Gaz. Part II, Vol. 133)

Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Toxic Chemical
 Control Law (TCCL) List : On the inventory, or in compliance with the inventory

Philippines. The Toxic
 Substances and Hazardous
 and Nuclear Waste Control
 Act : On the inventory, or in compliance with the inventory

China. Inventory of Existing
 Chemical Substances : On the inventory, or in compliance with the inventory

TSCA 12B : US. Toxic Substances Control Act (TSCA) Section 12(b) Export
 Notification (40 CFR 707, Subpt D)

Tetrahydrofuran 109-99-9

National regulatory information

US. Drug Enforcement
 Administration (DEA) Listed
 Precursor and Essential
 Chemicals (21 CFR 1310) : On the United States Drug Enforcement Authority (DEA) List of
 Precursors and Essential Chemicals

: Acetic anhydride 108-24-7

SARA 311/312 Hazards : Fire Hazard
 Acute Health Hazard
 Reactivity Hazard

**CERCLA Reportable
 Quantity** : 1111 lbs

California Prop. 65 : This product does not contain any chemicals known to State of
 California to cause cancer, birth, or any other reproductive
 defects.

Massachusetts RTK : Tetrahydrofuran 109-99-9
 : Acetic anhydride 108-24-7

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New Jersey RTK	: Tetrahydrofuran	109-99-9
	: Acetic anhydride	108-24-7
Pennsylvania RTK	: Tetrahydrofuran	109-99-9
	: Acetic anhydride	108-24-7
WHMIS Classification	: B2 E	

SECTION 16. OTHER INFORMATION

	HMIS III	NFPA
Health Hazard	: 3*	3
Flammability	: 3	3
Physical Hazard	: 1	
Instability	:	1

Further information

* - Chronic health hazard